IN THE CLAIMS:

Please CANCEL claims 12-17, without prejudice or disclaimer.

Please ADD new claims and AMEND the claims as follows:

1. (CURRENTLY AMENDED) A wavelength division multiplexed ~~An~~ optical amplifier comprising:

a first-stage optical amplifying unit and a second-stage optical amplifying unit arranged in series with respect to an optical signal, where a first pumping light is supplied to said first-stage optical amplifying unit at an ~~output~~ input side of said first-stage optical amplifying unit ~~as backward pumping light~~, ~~and~~ a second pumping light is supplied to the first-stage optical amplifying unit at an output side of said first-stage optical amplifying unit, and a ~~second~~ third pumping light is supplied to said second-stage optical amplifying unit ~~as forward pumping light~~,

a common automatic gain control circuit

performing automatic gain control in accordance with the optical signal at ~~an~~ the input side of the first-stage optical amplifying unit and the optical signal at an output side of said second-stage optical amplifying unit,

producing a first control signal for controlling the first pumping light, and

producing a second control signal for commonly controlling both the second pumping light and the third pumping light, and

a pumping light distribution function unit receiving the ~~a~~ second control signal from said common ~~AGC~~ automatic gain control circuit and, in accordance with the received second control signal, supplying said ~~first~~ second pumping light to the first-stage optical amplifying unit at the output side of the first-stage amplifying unit and said ~~second~~ third pumping ~~lights~~ light to the second-stage optical amplifying unit at the input side of the second-stage optical amplifying unit with a predetermined distribution ratio of a:b (a<b) in their levels, which ratio is constant at any level of said first pumping light~~,~~

~~wherein the predetermined distribution ratio causes an increased gain near an upper limit where oscillation occurs in said first-stage optical amplifying unit to thereby obtain a low noise figure, and causes fluctuation of output at said output side of said second-stage optical amplifying unit due to ASE to be suppressed when a number of input wavelengths of the optical signal at said input side of said first-stage optical amplifying unit rapidly decreases~~.

2. (CURRENTLY AMENDED) An optical amplifier as set forth in claim 1, wherein said pumping light distribution function unit comprises:

a single pumping light source, and

an optical coupler for splitting pumping light from said single pumping light source with the predetermined distribution ratio into said ~~first~~ second pumping light and said ~~second~~ third pumping light, and supplying said ~~first~~ second pumping light and said ~~second~~ third pumping light to said first-stage optical amplifying unit and said second-stage optical amplifying unit, respectively.

3. (CURRENTLY AMENDED) An optical amplifier as set forth in claim 1, wherein said pumping light distribution function unit comprises:

a first pumping light source providing said ~~first~~ second pumping light,

a second pumping light source providing said ~~second~~ third pumping light, and

a driving unit driving said first and second pumping light sources to match said predetermined distribution ratio.

4. (CANCELED)

5. (CANCELED)

6. (CANCELED)

7. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 1, wherein said optical amplifier is provided with at least three stages of optical amplifying units including an additional optical amplifying unit arranged in series with said optical signal, and two of said optical amplifying units are made to be said first-stage optical amplifying unit and said second-stage optical amplifying unit.

8. (PREVIOUSLY PRESENTED) An optical amplifier as set forth in claim 1, further comprising:

a distribution ratio control function unit able to change said predetermined distribution ratio.

9. (CURRENTLY AMENDED) An optical amplifier as set forth in claim 8, wherein said distribution ratio control function unit is an optical attenuator able to change an intensity of at least one of said ~~first~~ second pumping light and said ~~second~~ third pumping light.

10. (CURRENTLY AMENDED) An optical amplifier as set forth in claim 1, wherein

said first-stage optical amplifying unit comprises an optical amplifying medium through which the ~~first~~ second pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said first-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide, and

said second-stage optical amplifying unit comprises an optical amplifying medium through which the ~~second~~ third pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said second-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide.

11. (CURRENTLY AMENDED) An optical amplifier as set forth in claim 7, wherein

said first-stage optical amplifying unit comprises an optical amplifying medium through which the ~~first~~ second pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said first-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide, and

said second-stage optical amplifying unit comprises an optical amplifying medium through which the ~~second~~ third pumping light travels to thereby amplify the optical signal as the optical signal travels through said optical amplifying medium, said optical amplifying medium of said second-stage optical amplifying unit being a rare earth-doped fiber or an optical waveguide.

12-17. (CANCELED)

18. (NEW) An optical amplifier as set forth in claim 1, wherein said predetermined distribution ratio is made a value giving a gain increased near an upper limit where oscillation occurs in said first-stage optical amplifying unit so as to obtain a low noise figure.

19. (NEW) An optical amplifier as set forth in claim 1, wherein said predetermined distribution ratio is made a value enabling fluctuation of output at the output side of the second-stage optical amplifying unit due to amplified spontaneous emission (ASE) to be suppressed when a number of input wavelengths of the optical signal received at the input side of the first-stage optical amplifying unit rapidly decreases.

20. (NEW) An optical amplifier comprising:

a first-stage optical amplifying unit supplied with a first pumping light to an input side of the first-stage optical amplifying unit and a second pumping light to an output side of the first-

stage optical amplifying unit, receiving a wavelength division multiplexed (WDM) optical signal at the input side, and amplifying the received WDM optical signal in accordance with the supplied first and second pumping lights to thereby output a first-stage amplified WDM optical signal;

a second-stage optical amplifying unit supplied with a third pumping light to an input side of the second-stage optical amplifying unit, receiving the first-stage amplified WDM optical signal at the input side of the second-stage optical amplifying unit, and amplifying the received first-stage amplified WDM optical signal in accordance with the supplied third pumping light to thereby output a second-stage amplified WDM optical signal at an output side of the second-stage optical amplifying unit;

a common automatic gain control circuit producing first and second control signals in accordance with power level of the WDM optical signal at the input side of the first-stage optical amplifying unit and power level of the second-stage amplified WDM optical signal at the output side of the second-stage optical amplifying unit, wherein the first control signal is used to control the first pumping light supplied to the first-stage optical amplifying unit; and

a pumping light distribution function unit, in accordance with the second control signal, supplying the second pumping light to the first-stage optical amplifying unit and the third pumping light to the second-stage optical amplifying unit with a predetermined distribution ratio of a:b (a<b) in their levels, which ratio is constant at any level of the first pumping light, wherein the first and second control signals thereby cause gain of the optical amplifier to be automatically controlled.

21. (NEW) An optical amplifier comprising:

a first-stage optical amplifying unit supplied with a first pumping light to an input side of the first-stage optical amplifying unit and a second pumping light to an output side of the first-stage optical amplifying unit, receiving a wavelength division multiplexed (WDM) optical signal at the input side, and amplifying the received WDM optical signal in accordance with the supplied first and second pumping lights to thereby output a first-stage amplified WDM optical signal;

a second-stage optical amplifying unit supplied with a third pumping light to an input side of the second-stage optical amplifying unit, receiving the first-stage amplified WDM optical signal at the input side of the second-stage optical amplifying unit, and amplifying the received first-stage amplified WDM optical signal in accordance with the supplied third pumping light to thereby output a second-stage amplified WDM optical signal at an output side of the second-stage optical amplifying unit;

means for producing first and second control signals in accordance with power level of

the WDM optical signal at the input side of the first-stage optical amplifying unit and power level of the second-stage amplified WDM optical signal at the output side of the second-stage optical amplifying unit, wherein the first control signal is used to control the first pumping light supplied to the first-stage optical amplifying unit; and

means, in accordance with the second control signal, for supplying the second pumping light to the first-stage optical amplifying unit and the third pumping light to the second-stage optical amplifying unit with a predetermined distribution ratio of a:b (a<b) in their levels, which ratio is constant at any level of the first pumping light, wherein the first and second control signals thereby cause gain of the optical amplifier to be automatically controlled.